REMARKS/ARGUMENTS

This communication is responsive to the Office Action of April 12, 2006 as well as to the telephonic interview with Examiner YE on October 11th 2006 in which the following objections were raised: [3] Examiner Disagreed with Applicant's characterization of the Nicholson Reference; [4-5] Claims 1-7 under 35 U.S.C. 112, first paragraph; [6-7] Claims 1-7 were rejected under 35 U.S.C. 102(b) as being anticipated by Nicholson (U.S. Pat. No. 5,543,954).

The Applicant appreciates the Telephonic Interview of October 11th and the Examiner's review of Applicant's proposed amendments of Claims 1 and 4. Applicant has amended Claims 1, 2, 4, 6 and canceled Claim 3.

EXAMINER TELEPHONIC INTERVIEW October 11, 2006

Applicant appreciates the telephonic interview with Examiner Lin Ye on October 11th 2006 and the Examiner's review of Applicant's proposed amendments to Claims 1 and 4.

The Applicant conceded that the Nicholson reference did teach two moveable mirrors providing input to the objective of a camera and that the Nicholson mirrors disclose a field of view which is substantially spherical.

The Applicant pointed out to the Examiner that the optical path to the camera in the Nicholson reference was at all times composed of two right angle bends provided by each of the Nicholson mirrors and that at no time was there tilting of the optical input path or a tilting of either mirror. The Applicant further pointed out that the tilt axis of the Applicant's tilting mirror and the axis of rotation of the Nicholson mirror 12 were orthogonal to one another, with the Applicant providing a tilting of the optical input and corresponding angle of incidence thereof and Nicholson providing only a rotation of the optical input with no variation in the angle of incidence thereof. The Examiner seemed receptive to this distinction but directed the Applicant's attention to column 5 of the Nicholson reference lines 5-13 in which Nicholson discusses a permanent adjustment of the mirror 12 to allow inclusion into the field of view of the conical polar regions formerly omitted from such view. "*The field of*

view of the present invention is almost spherical, except for a small conical area above and below ...the X-axis. If it is important to see these areas , ...mirror 12 can be adjusted to allow the noted areas to be included in the field of view."(Nicholson at Col 5, lines 5-10).

The Applicant also discussed dependent Claim 2 with the Examiner. The Applicant and Examiner discussed the belt 30 shown in Nicholson's Figures 1-3 which belt drives both mirrors 14 and 12 directly without any intervening drive member, planetary or otherwise. The Applicant pointed out that the belt can not be considered a planetary member since it drives both mirrors directly.

No Agreement was reached.

3 EXAMINER REJECTS APPLICANT'S CHARACTERIZATION OF REFERENCE

Examiner found Applicant's characterization of the Nicholson reference (U.S. Patent 5,543,954) not persuasive as to: field of view and planetary linkage. The Applicant will address these in order.

Field of View: The Examiner characterizes the field of view of the Nicholson reference as almost spherical and the Applicant concurs with that characterization.

The Examiner further characterizes Nicholson mirror 12 as affecting during its rotation about the 'Y' axis a variation in the '*angle of incidence of the optical input path....*"(Office Action of 6/12/2006 at page 3) . Applicant respectfully rejects this latter characterization and requests the Examiner's indulgence in re-visiting this issue. Nicholson is concerned with an optical scanner which minimizes distortion. "*One problem is to maintain the largest possible scan field while ...maintaining the quality of the scanned image....*"(Nicholson at col. 1, lines 55-58). Nowhere in the Nicholson disclosure is mirror 12 referred to as a tilt mirror. Indeed on the basis of all the Nicholson drawings which show mirror 12, it is apparent that side supports 40 fix the angle of incidence between mirror 12 and the 'Y' axis at an angle of 45 degrees, thereby effecting a 90 degree bend in the optical

path and minimizing distortion of the image. "*Side supports 40 hold first mirror at a forty-five degree angle with respect to drive ring 42.*" (Nicholson at col. 4, lines 8-9, emphasis added) "*The axis passing through said diverters intersect at substantially ninety degrees....*"(Nicholson at col. 2, lines 2-4, emphasis added) This angle does not change during rotation of the Nicholson mirror 12.

During the Telephonic Interview the Examiner cited a portion of the Nicholson reference where adjustment of mirror 12 to include in the field of view the omitted polar regions along the optical axis 'X' is mentioned. (Nicholson at col. 5, lines 5-13). "*If it is important to see these areas, ...mirror 12 can be adjusted to allow the noted areas to be included in the field of view, at the expense of image quality, since distortion of the image will occur*" (Nicholson at col. 5, lines 8-11, emphasis added). Such adjustment, the Applicant respectfully suggests, is not the dynamic tilting provided for in the Applicant's invention, but rather a fixed adjustment of the side plates holding mirror 12 at some fixed angle other than the preferred 45 degrees. The Applicant offers in support of this reading of the Nicholson reference two observations. First, nowhere in the Nicholson reference is there any teaching or disclosure of any mechanism for tilting mirror 12 in a manner which dynamically changes the angle of incidence of mirror 12 with respect to the optical axis during scanning as is the case in the Applicant's invention. Secondly, where in the Nicholson reference adjustment of mirror 12 is mentioned, it appears to be in the context of a fixed adjustment by means of side plates 40 of the angle of incidence to an angle greater than 45 degrees, at which angle of incidence the undesirable distortion of the image will occur throughout the rotation of mirror 12 about the 'Y' axis.

Planetary Linkage: The Examiner characterizes the drive belt 90 of Nicholson as a planetary member. The Applicant respectfully rejects that characterization. Element 90 in the Nicholson reference is one of two opposing idlers which effect a 90 degree bend of drive belt 88 between the 'Y' axis drive ring 42 and the primary drive ring 34. At no time does belt 88 exhibit planetary movement with respect to either ring 42 or 34. Significantly, nowhere in the Nicholson reference does the word planetary or planet appear with respect to any assembly or component thereof.

4-5 **CLAIMS 1-7 REJECTED UNDER 35 U.S.C. 112, 1st**

Claims 1-7 under 35 U.S.C. 112, first paragraph. Specifically the language in the applicants amended claims directed toward tilting of the tilting mirror and the axis about which said tilting is affected, i.e. an axis normal to the plane of the optical path, was objected to. "[O]nly one optical path cannot define a plan[e]." (Office Action of 4/12/2006 at page 4).

Applicant's FIGS. 2,3,4 show first and second side views and a top view of the Applicant's pan tilt device including fixed mirror 9 and tilt mirror 10. The axis of rotation of the tilt mirror is clearly shown in each of FIGS. 2-4. That axis is normal to a plane defined by the optical axis of the camera and the optical input to the fixed mirror 9. "*The fixed mirror 9 is mounted ... in front of objective 8 at an angle of 37 degrees relative to the optical center axis of camera.....The fixed mirror ... is mounted to a mirror wheel...which is rotatable around the objective and hence provides a field of view with an angle of rotation of between 0° and 360°. In the center of the field of view the tilting mirror...is mounted, so that the axis of rotation thereof is perpendicular to the optical center axis of the camera. The tilting mirror ...is carried on the mirror wheel...thereby causing the tilting mirror ...to rotate around the objective...together with the fixed mirror....The tilting mirror ... is attached to a mirror holder 11, which in turn is journalled in the mirror wheel 5 between two fixing parts 2. Opposite to the mirror wheel 5 a ... guiding wheel 1 is concentrically mounted. A tilt shaft 3 is ... mounted to the mirror wheel, so as to cause the tilting mirror ...to move. The guiding wheel ... transmits its motion to the tilt shaft... and from the tilt shaft 3 through a bevel gear 4 to the mirror holder 11. The arrangement resembles a planetary gear, where the guiding wheel represents a sun pinion and the tilt shaft represents a planet pinion....When the mirror wheel does not move, if the guiding wheel is rotated the tilt shaft 3 will rotate around its own axis, wherein the mirror holder 11 will be rotated around its axis of rotation. Hence, the tilting mirror 10 is rotated with respect to the mirror wheel 5, and the center axis of the field of view will be angled with respect to the optical center of the camera. If the mirror wheel...and the guiding wheel ...rotates at the same angular velocity, there will be no relative motion in the tilt shaft and consequently no rotation of the mirror...around its axis of rotation. However, the mirror wheel... as a whole will rotate with the fixed mirror ... and the tilting mirror...at a*

constant angle to the optical center axis of the camera." (Applicant's specification at page 5, line 11 through page 7, line 4).

The Applicant's amended Independent Claims 1, 4 and 6 clarify the orientation of the axis of rotation of the tilt mirror with respect to a plane characterized by the optical input to the panning mirror and the optical axis of the camera. Such characterization is fully supported in both the drawings and specification. The Applicant therefore respectfully requests that the Examiner withdraw the aforesaid rejection both as to the rejected Claims 1, 4 and 6 and as to remaining Claims dependent thereon.

6-7 CLAIMS 1-7 REJECTED UNDER 35 U.S.C. 102(b):

Claims 1-7 were rejected under 35 U.S.C. 102(b) as being anticipated by Nicholson (U.S. Pat. No. 5,543,954). The Examiner has cited the Nicholson reference as disclosing a panning and tilting mirror coupled to the objective of a camera. The Applicant respectfully rejects this characterization of the Nicholson reference.

The Applicant incorporates by reference the above summary of the Examiner's interview. The Nicholson reference discloses a pair of mirrors rotationally coupled for rotation about 'X' and 'Y' axis. Nowhere in the Nicholson reference are mirrors 14 and 12 referred to as a panning or a tilting mirror and with good reason. Nicholson's mirror 14 is not a panning mirror since it rotates with the camera itself. "*...[A] sensor, like a video camera or infra-red detector, have a limited field of view, it is desirable to expand that field of view while maintaining good image quality and preferably avoiding image rotation. The sensing device is attached to sensor drive ring 38 in a conventional manner. Hence, whenever drive motor 26 is energized, sensor ring 38 will rotate through the same angle and/or at the same rate as either Y-axis drive ring 42 or X-axis drive ring 76.*" (Nicholson at col. 4 lines 63-67 and col. 5 lines 1-3, emphasis added) . "*A sensor (not shown) such as a video camera, is attached to sensor ring 38 in a manner that allows the sensor to rotate with the ring.*" (Nicholson at col. 4 lines 1-3). Mirror 12 is not a tilting mirror since both it and mirror 12 intersect the 'Y' axis at all times during rotation at substantially 90 degrees. "*The axis*

passing through said diverters intersect at substantially ninety degrees...."(Nicholson at col. 2, lines 2-4, emphasis added) .

Applicant has amended each of Independent Claims 1, 4, and 6 to clarify the orientation of the axis of rotation of the tilt mirror with respect to a plane characterized by the optical input to the panning mirror and the optical axis of the camera. Such characterization is fully supported in both the drawings and specification. Such element is not disclosed in the Nicholson reference and therefore is not anticipated by same. The Applicant therefore respectfully requests that the Examiner withdraw the rejection as to Independent Claims 1,4,6 and also as to remaining Claims 2, 5, and 7 dependent thereon.

CONCLUSION

In view of the above remarks, and the amendments to the Claims, Applicant respectfully submits that all remaining Claims 1-2 and 4-7 have been placed in a condition for allowance, and requests that they be allowed. Early notice to this effect is solicited.

The Commissioner is authorized to charge any additional fees which may be required, including petition fees and extension of time fees, to Deposit Account No. 50-1338 (Docket No. STGUP008).

Respectfully submitted,
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